ComPact Air Drive II

USER'S MANUAL

SYNTHES® *Original Instruments and Implants of the Association for the Study of Internal Fixation—AO ASIF*

Indications

The ComPact Air Drive II is an air-driven system indicated for drilling, sawing, inserting/removing K-wires, reaming and screw insertion.

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Specifications

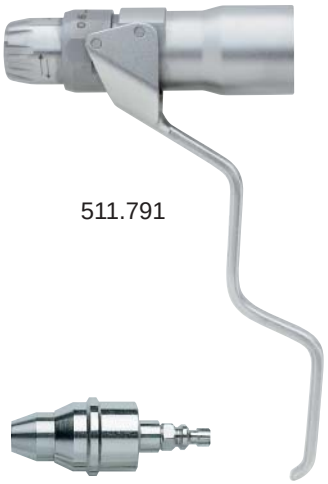
ComPact Air Drive II [511.701]

- Speed (without attachment): 0 – 900 rpm (maximum speed varies with attachment)
- Torque (without attachment): 0 – 4.7 Nm (maximum torque varies with attachment)
- Weight: 0.780 kg
- Operating Pressure (with machine running): 6 bar (90 psi)
- Air consumption: 250 l/min
- Cannulation: 3.2 mm
- Cleaning Brush [519.40] and Autoclavable Oil [519.97] included

Attachments

Quick Coupling for Kirschner Wires [511.791]

- Speed: 0 – 900 rpm
- Torque: 0 – 4.7 Nm
- Cannulation: 3.2 mm (fully open)
- Function:
  - To insert/remove Kirschner wires and guide pins 0.6 – 3.2 mm diameter (any length)



511.791

Quick Coupling for drill bits [511.75]

- Speed: 0 – 900 rpm
- Torque: 0 – 4.7 Nm
- Cannulation: 1.3 mm
- Function:
  - Accepts cutting tools and instruments with AO ASIF quick coupling fitting.
  - Accepts Oscillating Drill Attachment [511.20] and Radiolucent Drive [511.30]

511.75

Large Quick Coupling [511.761]

- Speed: 0 – 900 rpm
- Torque: 0 – 4.7 Nm
- Cannulation: 3.2 mm
- Function:
  - Accepts cutting tools and instruments with large quick coupling fitting.

511.761

Reduction Drive Unit [511.785]

- Speed: 0 – 340 rpm
- Torque: 0 – 13 Nm
- Cannulation: 3.2 mm
- Function:
  - Accepts cutting tools and instruments with AO ASIF reaming fitting.
  - Locks reverse trigger operation to prevent damage to coiled flexible reaming shafts.
  - Accepts Hudson, Trinkle and Modified Trinkle Adaptors.

511.785

511.73

Jacobs Chuck with key [511.73]

- Speed: 0 – 900 rpm
- Torque: 0 – 4.7 Nm
- Cannulation: 3.2 mm
- Function:
  - Accepts round shafts up to 6.0 mm
  - Accepts triangle shafts up to 6.5 mm

Operating Instructions

DRIVE UNIT

IMPORTANT

- *Use only dry, filtered compressed air or nitrogen to power the ComPact Air Drive II. Never operate air powered machines with oxygen; it creates a danger of fire and explosion.*
- *Recommended operating pressure, with the instrument running, is 90 psi (6 bar).*

For forward (clockwise) rotation, press the variable-speed trigger of the air drive.*
Press both triggers for reverse (counterclockwise) rotation.

Air Inlet Valve

The ComPact Air Drive II air inlet valve controls the maximum speed and power. It also turns the drive unit off for safety.

IMPORTANT

To prevent injuries, the air inlet valve should always be turned to the "off" position when inserting or removing instruments and attachments.

*The variable-speed trigger allows control of the speed from 0 to maximum rpm. Maximum torque and speed vary, depending on the attachment.

ASSEMBLY/DISASSEMBLY

Connect air hose:
Retract the hose coupling collar

Insert the double hose connector of the drive unit into the hose coupling

Release the hose coupling collar

Disconnect air hose:
Press the drive unit and hose together and simultaneously retract the hose coupling collar. Remove the air hose.

Insert attachment:
Insert the attachment into the attachment coupling of the drive unit until it engages

Pull lightly on the attachment to confirm it is held securely

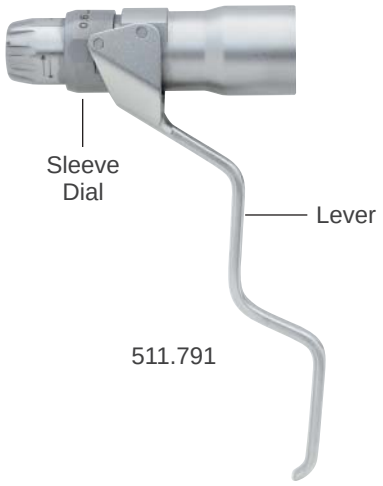
Remove attachment:
Press the release button and remove the attachment.

Operating Instructions (continued)

Quick Coupling for Kirschner Wires [511.791]

For insertion of K-wires from 0.6 mm to 3.2 mm diameter.

See page 5 for installation and removal of attachments.



IMPORTANT

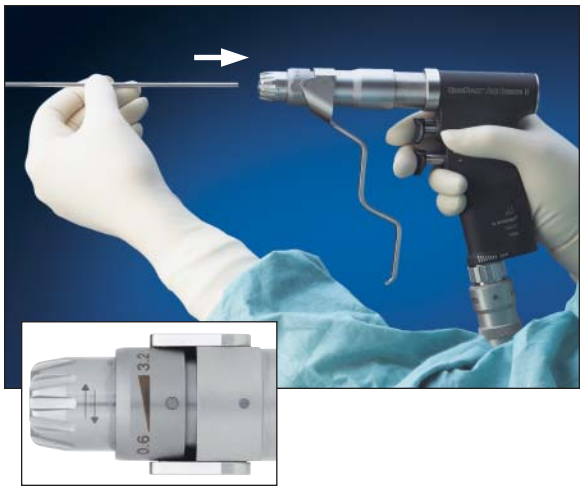
To prevent injuries, the air inlet valve should always be turned to the "off" position when inserting or removing K-wires.

Insert a K-wire/guide pin in the attachment:

Open the cannulation fully by turning the adjustment collar to the open position (in the 3.2 mm direction).

Insert the wire and turn the adjustment collar as far as possible to the closed position (in the 0.6 mm direction) until the wire is clamped, keeping the wire centered in the attachment.

Turn the adjustment collar back 3 clicks (in the 3.2 mm direction). The spring-loaded mechanism will prevent the wire from falling out; however, it will allow the attachment to be repositioned on the wire. (Confirm that the wire can be repositioned; open the adjustment collar by another 2 – 4 clicks, if necessary).



Insert the K-wire/guide pin into the bone

Insert the wire by simultaneously pulling back the attachment lever and pressing the lower (variable-speed) trigger of the drive unit. To reposition the attachment on the wire, release the lever and move the Compact Air Drive to the desired position.

Remove the K-wire/guide pin from the bone

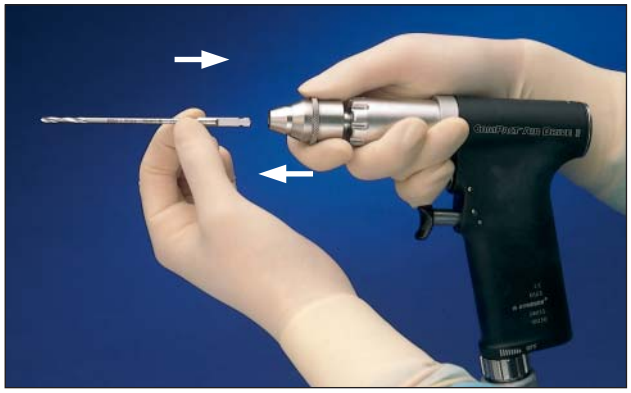
Open the adjustment collar fully (in the 3.2 mm direction) then guide the drive unit with attachment over the wire. Close the adjustment collar until the wire is clamped, then turn the collar back 3 clicks. Pull the attachment lever and press both triggers to remove the K-wire/guide pin.

Quick Coupling for Drill Bits [511.75]

511.75

- Accepts cutting tools and instruments with an AO ASIF quick coupling fitting
- Allows use of Oscillating Drill Attachment [511.20] and Radiolucent Drive [511.30]

Insert an instrument:
Push the collar of the Quick Coupling forward and insert the instrument shaft completely with a slight rotation. When the shaft is fully inserted, release the collar. Pull on the instrument slightly to be sure it is held securely.



Remove an instrument:
Push the collar of the Quick Coupling forward and remove the instrument.

Large Quick Coupling [511.761]

Accepts cutting tools and instruments with a large quick coupling fitting. These include DHS/DCS Triple Reamers, large quick coupling screwdriver shafts, and large quick coupling cannulated drill bits for Synthes intramedullary nailing systems.

511.761

Insert an instrument:
Retract the collar of the Large Quick Coupling and insert the instrument shaft completely with a slight rotation. When the shaft is fully inserted, release the collar. Pull on the instrument slightly to confirm it is held securely.

Remove an instrument:
Pull back the collar of the Large Quick Coupling and remove the instrument.

IMPORTANT

To prevent injuries, the air inlet valve should always be turned to the "off" position when inserting or removing instruments from the Quick Couplings.

Operating Instructions (continued)

Reduction Drive Unit [511.785]

- Accepts cutting tools and instruments with AO ASIF reaming fitting
- Locks reverse-trigger operation to prevent damage to coiled flexible reaming shafts
- Accepts Hudson, Trinkle and Modified Trinkle Adaptors

See page 5 for installation and removal of attachments.

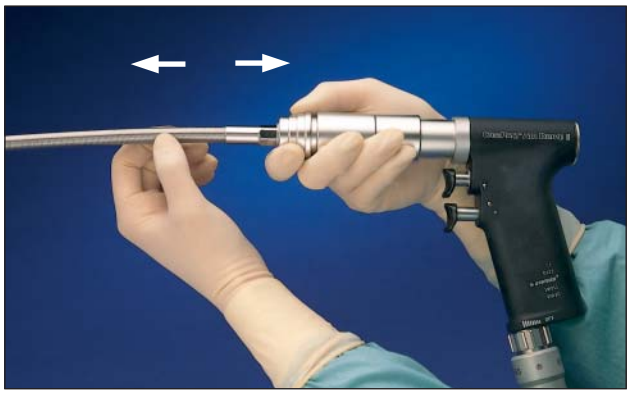
511.785

IMPORTANT

To prevent injuries, the air inlet valve should always be turned to the "off" position when inserting or removing instruments from the Reduction Drive Unit.

Insert an instrument:
Insert the instrument shaft into the opening until it engages. Pull lightly on the instrument to confirm it is held securely.

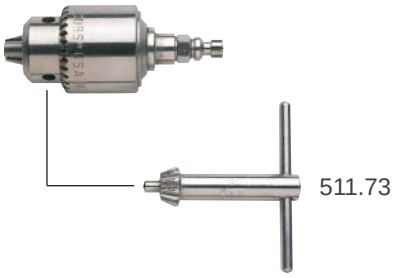
Remove an instrument:
Pull back the collar of the attachment and remove the instrument.



Jacobs Chuck with Key [511.73]

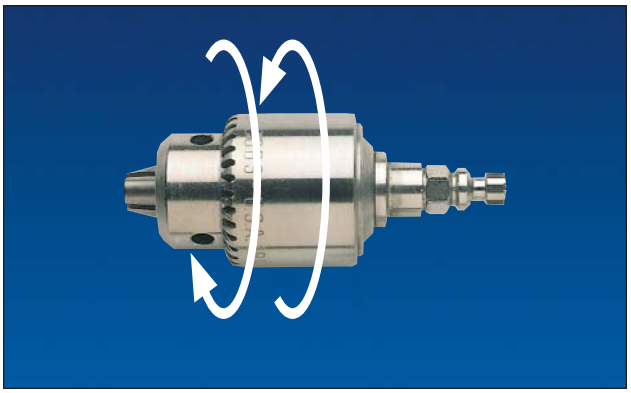
- Accepts round shafts up to 6.0 mm, and triangular shafts up to 6.5 mm.

See page 5 for installation and removal of attachments.



IMPORTANT

To prevent injury, the air inlet valve should always be turned to the "off" position when inserting or removing an instrument.



Insert an instrument:
Open the chuck jaws by turning the key counter-clockwise, or by manually turning the collar. Insert the instrument shaft into the opened chuck.

Close the chuck manually by rotating the collar, keeping the shaft centered in the jaws.

Tighten the chuck by turning the key clockwise.

IMPORTANT

Always remove the key from the chuck before operating the air drive.

Remove an instrument:
Turn the key counterclockwise to open the jaws and remove the instrument

Care and Maintenance

Regular care and maintenance according to the following guidelines can significantly increase reliability and lifespan of the system. Synthes recommends annual preventive services. Yearly maintenance will ensure that the equipment maintains the highest standard of performance and will prolong the life of the system.

IMPORTANT

- *Before cleaning and sterilization, remove attachments, instruments and hose from the air drive unit.*
- *Clean and lubricate the air drive, attachments and air hose immediately after each use.*
- *Clean the drive unit, attachments and air hose by hand; never immerse or clean in an automatic washer or ultrasonic cleaner.*
- *Use a mild, neutral pH cleaning solution to clean the air drive and accessories.*

CLEANING

Before cleaning, turn the air inlet valve to the "off" position. Manipulate all other moving parts under running water to loosen and remove debris. Open and close chucks, and move quick couplings back and forth.

1 Manually remove blood and debris from the air drive and attachments under running water. Use a mild cleaning solution and a soft brush or cloth.

Do not allow water to enter the air inlet of the drive unit.

2 Clean cannulations of the air drive and attachments with the Cleaning Brush [519.40].

Do not insert the cleaning brush into the air inlet. The Quick Coupling for Kirschner wires [511.791] must be fully open to its maximum diameter of 3.2 mm before inserting the brush.

3 Retract and clean the quick-coupling hose end with a soft brush and mild cleaning solution.
Do not allow water to enter the air inlet.

4 Clean the hose with a mild cleaning solution and a soft brush or cloth.
Keep hose ends out of water.

5 Dry all instrumentation with a soft cloth.

Care and Maintenance (continued)

LUBRICATING

Use only SYNTHES Autoclavable Oil [519.97] to lubricate the ComPact Air Drive II drive unit and attachments. The drive unit and attachments should be oiled after each use. Lubrication should be performed after cleaning and before ster-

DRIVE UNIT

1 Open air inlet valve before lubrication. Apply approximately five drops of Autoclavable Oil into the air intake of the drive unit. Lubricate both triggers.

2 Connect the air drive to a double or single air hose.

3 Run the air drive for 20 seconds in both directions. When using a single air hose, use a cloth to collect the excess oil.

ATTACHMENTS

1. Apply two to three drops of oil to all moving parts of the attachments.

2. Operate moving parts to distribute oil.

3. Wipe away excess oil with a cloth.

4. Lubricate the quick-coupling hose end with one to two drops of oil.

Sterilization

To sterilize air-powered equipment and air hoses:

- If the handpiece is new, remove the plastic stopper in the air inlet.
- Disassemble all parts, including hoses, attachments, adaptors and instruments.
- All air-powered equipment should be steam sterilized in accordance with the following guidelines:

	Temperature	Pressure	Minimum Exposure Time
Wrapped			
Gravity displacement	132–135°C 270–275°F	28–32 psi (2 bar)	22 minutes
Prevacuum	132–135°C 270–275°F	28–32 psi (2 bar)	8 minutes
Unwrapped (Flash)			
Gravity displacement	132–135°C 270–275°F	28–32 psi (2 bar)	8 minutes
Prevacuum	132–135°C 270–275°F	28–32 psi (2 bar)	6 minutes

IMPORTANT: *Times represent exposure times only and not total cycle times.*

To minimize hose deformation during autoclaving:

- Place absorbent muslin between handpieces and hoses.
- Do not place weight on the hose.

IMPORTANT

- *Do not accelerate the cooling process. In emergencies, a partially cooled saw or drill can be brought to room temperature by cycling filtered compressed nitrogen or air through it.*
- *Hot air and ethylene oxide gas (ETO) sterilization are not recommended. Hot air can damage air hoses, and steam sterilization is a safer alternative than ETO sterilization.*

Troubleshooting

PROBLEM	PROBABLE CAUSE	SOLUTION
Machine does not start	Safety system may be activated Rotor may jam if machine is not used for a long time	Slide air inlet valve to the “on” position Mount quick coupling, then rotate chuck manually, without pressing trigger
Machine lacks power	Operating pressure is too low	Adjust operating pressure to 90 psi (6 bar) on regulator
	Air inlet is blocked	Clean air inlet: remove solid particles with pickups **Important:** *Do not use sharp tools. Turn air inlet valve to the “off” position*
	Air inlet valve may not be completely open	Slide the air inlet valve to the “on” position
	Air hose is too long	Overall hose length should not exceed 26 feet (8 meters)
Machine keeps running after trigger is released	Trigger is jammed by residues	Immediately turn air inlet valve to the “off” position Operate trigger several times, clean and oil according to instructions **Important:** *Use only SYNTHES Autoclavable Oil*
Attachments cannot be coupled to machine	Coupling is blocked by residue	Remove solid particles with pickups **Important:** *Do not use sharp tools. Turn air inlet valve to the “off” position*
Cannot remove attachments from drive unit	Release inhibited by pulling on attachment while pressing the release button	Press release button before attempting to remove attachment
Cannot attach instrument or difficulty attaching instrument	Instrument excessively worn, especially insertion part	Replace instrument
K-wire completely inserted into coupling, cannot be advanced	K-wire inserted incorrectly into rear of machine	Disconnect Quick Coupling, hold drive unit with opening down and shake out K-wire **Important:** *Turn air inlet valve to the “off” position*

If suggested solutions are unsuccessful, call the Synthes Service Department at **1-800-288-6698** for servicing information.

Annual servicing by qualified SYNTHES personnel is recommended.

ComPact Air Drive II Set [150.16]

Set Contents

304.010 Graphic Case for ComPact Air Drive II

511.701 ComPact Air Drive II

Attachments

511.73 Jacobs Chuck with Key

511.75 Quick Coupling for drill bits

511.761 Large Quick Coupling

511.785 Reduction Drive Unit

511.791 Quick Coupling for Kirschner Wires

Also with set:

519.51S Double Air Hose, 3 meter length with Schrader stem

Also Available

519.97 Autoclavable Oil

519.98 Spare Container with Autoclavable Oil

519. 40 Cleaning Brush

Double Air Hoses, with SYNTHES stem:

519.50 2 meter length

519.51 3 meter length

519.53 5 meter length

Double Air Hoses, with Schrader stem:

519.50S 2 meter length

519.53S 5 meter length

Also Available

511.20	Oscillating Drill Attachment
511.30	Radiolucent Drive
511.731	Jacobs Chuck, Keyless
511.782	Hudson Adaptor
511.783	Modified Trinkle Adaptor
511.784	Trinkle Adaptor
511.786	Reduction Drive Unit with Reverse
511.80	Oscillating Saw Attachment
511.801	Oscillating Saw Attachment II
511.902	Reciprocating Saw Attachment
511.904	Sternum Top, for use with 511.902

Saw Blades, calibrated, sterile◊

	WIDTH	CALIBRATED LENGTH	CUTTING THICKNESS
519.100S	27 mm	50 mm	0.6 mm
519.103S	10 mm	25 mm	0.6 mm
519.104S	10 mm	50 mm	0.6 mm
519.105S	20 mm	50 mm	0.6 mm
519.106S	19 mm	70 mm	1.0 mm
519.113S	18 mm	70 mm	1.2 mm
519.150S	14 mm	50 mm	0.6 mm
519.170S	27 mm	70 mm	0.8 mm
519.190S	50 mm	70 mm	0.8 mm
519.200S	27 mm	70 mm	1.0 mm
519.210S	27 mm	70 mm	1.2 mm
519.230S	6 mm	25 mm	0.6 mm
519.250S	14 mm	25 mm	0.6 mm

Saw Blades, calibrated, aggressive tooth, sterile only

	WIDTH	CALIBRATED LENGTH	CUTTING THICKNESS
519.107S	19 mm	95 mm	0.9 mm
519.108S	25 mm	95 mm	0.9 mm
519.109S	25 mm	60 mm	0.9 mm
519.114S	19 mm	95 mm	1.25 mm
519.115S	25 mm	95 mm	1.25 mm
519.116S	19 mm	95 mm	1.4 mm
519.117S	25 mm	95 mm	1.4 mm
519.118S	12.5 mm	90 mm	0.9 mm

Reciprocating Saw Blades, sterile◊

	CUTTING LENGTH	CUTTING THICKNESS
511.905S	80 mm	1.1 mm
511.907S	55 mm	1.1 mm
511.909S	55 mm	0.9 mm
511.912S	68 mm	1.1 mm
511.915S	42 mm	0.8 mm

Oscillating
Drill Attachment
511.20

Keyless
Jacobs Chuck
511.731

Radiolucent Drive
511.30

Hudson Adaptor
511.782

Modified
Trinkle Adaptor
511.783

Trinkle Adaptor
511.784

Oscillating Saw Attachment
511.80

Oscillating Saw Attachment II
511.801

Reciprocating Saw Attachment
511.902

519.100

511.905

519.104

511.907

519.250

511.909

519.108S

511.912

Service and Extended Warranty Programs for ComPact Air Drive II Set

W1.150.16 One-Year Extended Warranty and Service Program

W3.150.16 Three-Year Extended Warranty and Service Program

◊Also available nonsterile. Remove 'S' from part number to order nonsterile products.

ComPact Air Drive II Set [150.16]

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